

ABSTRACT OF THE DISCLOSURE

[0078] A system and method for forming one or more nanometer sized openings in a detecting region of an object, such as a semiconductor device that is used for identifying the individual mers of long-chain polymers, such as carbohydrates and proteins, as well as individual bases of deoxyribonucleic acid (DNA) or ribonucleic acid (RNA), to thus enable sequencing of the strand to be performed. The system and method employ the operations of positioning a mask pattern including a plurality of mask lines at a first orientation with respect to the mask on the semiconductor, and imposing the mask pattern on the mask to create first mask lines extending in a first direction along the mask. The system and method then move the mask pattern to a second orientation with respect to the mask on the semiconductor, and impose the mask pattern on the mask to create second mask lines extending in a second direction along the mask which is transverse to the first direction and overlapping the first mask lines, such that said surface of said object is exposed at areas of said mask between said first and second mask. The system and method further remove portions of the semiconductor at the removed portions of the mask to form the openings in the semiconductor.

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